

IN THE CLAIMS:

Please CANCEL claims 13-21 without prejudice to or disclaimer of the recited subject matter.

Please ADD new claims 22-32, as follows. Note that all the claims currently pending in this application, including those not currently being amended, have been reproduced below for the Examiner's convenience.

1-21. (Cancelled)

22. (New) A position detecting system comprising:

a light source;

a beam splitter for dividing light from said light source into plural light beams, wherein one of the divided light beams produces an intermediate image of an image position in a path of the light before the light is divided;

a reflecting member disposed at a position where another of the divided light beams directly produces an image of the image position;

an optical system for illuminating a target with light from the intermediate image, wherein the target is disposed at a position which is optically conjugate with the image position; and

an image pickup, wherein light from the target and light reflected by a reflecting surface of said reflecting member are re-combined to produce an image interference signal upon said image pickup.

23. (New) A position detecting system corresponding to claim 22, wherein said target and said image pickup are optically conjugate with each other.

24. (New) A position detecting system according to claim 22, wherein said light source provides coherent light.

25. (New) A position detecting system according to claim 24, further comprising a light diffuser movably disposed along a light path within said position detecting system.

26. (New) A position detecting system according to claim 22, wherein said beam splitter is a polarization beam splitter.

27. (New) A position detecting system according to claim 22, wherein the target and the intermediate image are optically conjugate with each other.

28. (New) A position detecting system according to claim 22, wherein said light source includes a plurality of light sources providing different wavelengths.

29. (New) A position detecting system according to claim 22, wherein the target comprises a mark provided on an object and having a surface with a surface level difference with respect to a direction of an optical axis of said optical system, and said image pickup is operable to detect an image signal related to the mark, at a position, as the object is moved along the optical axis direction, corresponding to a peak value at which a difference in reflection factor between a top and a bottom of the surface level difference of the mark is large.

30. (New) A position detecting system comprising:

    a light source;

    a beam splitter for dividing light from said light source into plural light beams, wherein one of the divided light beams is directed to illuminate a target while another of the light beams is directed to a reflecting member, the target and the reflecting member both being optically conjugate with a common position in a path of the light before the light is divided; and

    an image pickup, wherein light from the target and light reflected by the reflecting member are re-combined to produce an image interference signal upon said image pickup, wherein said position detecting system includes a lens in the path of the light beam between said beam splitter and the target, whereas said position detecting system does not include any lens in the path of the light between said beam splitter and said reflecting member.

31. (New) An exposure apparatus comprising:

position detecting means for detecting a position of an alignment mark provided on a surface of a workpiece to be exposed, said position detecting means including (i) a light source, (ii) a beam splitter for dividing light from said light source into plural light beams, wherein one of the divided light beams produces an intermediate image of an image position in a path of the light before the light is divided, (iii) a reflecting member disposed at a position where another of the divided light beams directly produces an image of the image position, (iv) an optical system for illuminating a target with light from the intermediate image, wherein the target is disposed at a position which is optically conjugate with the image position, and (v) an image pickup, wherein light from the target and light reflected by a reflecting surface of said reflecting member are re-combined to produce an image interference signal upon said image pickup; and exposure means for aligning the workpiece by use of positional information related to a position of the alignment mark with respect to a direction along the surface of the workpiece and produced on the basis of the image signal, and for performing a pattern exposure to the workpiece.

32. (New) A device manufacturing method comprising:

a position detecting step for detecting a position of an alignment mark provided on a surface of a workpiece to be exposed, by use of a position detecting system that includes (i) a light source, (ii) a beam splitter for dividing light from the light source into plural light beams, wherein one of the divided light beams produces an intermediate image of an image position in a

path of the light before the light is divided, (iii) a reflecting member disposed at a position where another of the divided light beams directly produces an image of the image position (iv) an optical system for illuminating a target with light from the intermediate image, wherein the target is disposed at a position which is optically conjugate with the image position, and (v) an image pickup, wherein light from the target and light reflected by a reflecting surface of the reflecting member are re-combined to produce an image interference signal upon the image pickup;

a pattern exposure step for aligning the workpiece by use of positional information related to a position of the alignment mark with respect to a direction along the surface of the workpiece and produced on the basis of the image signal, and for performing a pattern exposure to the workpiece; and

a development step for developing the workpiece having been exposed in said pattern exposure step, whereby a device can be produced from the developed workpiece.